Energy Alert

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Hotel Battles Recession with Energy Saving Policy

CALGARY — "In the hospitality industry, the customer is always right," says Harry Nicholls, Building Superintendent of the Marlborough Inn in Calgary. "If they're cold, we give them heat. If they're hot, we cool them down."

Keeping customers in the style to which they've become accustomed at the Marlborough appears not to be conducive to energy conservation. Nevertheless, the 273-room hotel has the potential to cut energy consumption by 26 per cent with no appreciable difference to the customers' comfort.

Ed Watson, Manager, Rooms Division explained: "We became energy conscious to save money. You need to keep operating costs at a low but realistic level in a competitive rental market. This year especially, with occupancy rates down significantly because of the downturn in the economy, our senior management became keenly aware of the high cost of our utilities. Our utility bills for last year totalled nearly $280,000. It seemed obvious that one way to save money was to cut back on energy costs. But, as Harry Nicholls said, our guests come first. We want to save money and energy but not at the expense of customer satisfaction.

"The first major breakthrough came when we called in the Energy Bus to audit our energy consumption. (The Energy Bus is a no-charge energy audit service provided on request by Alberta Energy and Natural Resources.) The audit team showed us how we could save $72,000. That's about 26 per cent of our energy bill.

"Their advice was sensible, practical and realistic. We've already implemented about 65 per cent of their suggestions and we're currently assessing the other recommendations. We can save a full 50 per cent of that $72,000 by turning off specific exhaust fans at night and reducing the ventilation flow in some areas during off-peak time. Something as simple as turning lights out and turning thermostats down in unoccupied rooms makes a substantial difference. So does lowering the hot water supply temperature to 66°C from 88°C and installing shower head restrictors to reduce the flow to 18 litres per

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The Marlborough Inn's staff practices "turn-out, turn-down, turn-off" policy and nets a 26 per cent saving.

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minute (4 gallons) from 23 litres (5 gallons) per minute. And this has no effect at all on our guests' comfort."

Watson is justifiably pleased with the results of the Marlborough's energy saving economies and credits the Inn's maintenance staff for making energy conservation work.

"We're all aware now of how wasteful — and expensive — it is to keep lights burning and equipment running unnecessarily. We're practicing a 'turn-out, turn-down, turn-off policy'. Unless it's needed for our guests' comfort and convenience, it's turned off."

Simple common sense

The Marlborough Inn is solving its energy crisis, not by elaborate schemes or costly expenditures, but by simple common sense. For instance, last year all hotels and motels across Canada were hard hit by the economic downturn with occupancy rates falling to unprecedented lows. The Marlborough Inn, usually one of the first in Calgary to hang out the NO VACANCY sign, has been only half full on most nights of this year. With a little judicious staggering of their occupancy pattern, the Marlborough can save more than $4000 in energy costs this year. The hotel has two towers, one has 12 and the other has seven storeys. Guest rooms in the 12-storey tower are filled first. All room thermostats in the seven-storey tower are set at 16°C and turned up as necessary to accommodate registered guests after the other tower has reached total occupancy. This practice can save $2400 in heating costs. Setting back thermostats during unoccupied hours in other areas too, such as banquet and dining rooms, will save another $1500.

Ed Watson, (left), Manager, Rooms Division and Harry Nicholls, Building Superintendent, discuss ways to cut back on energy consumption without lowering the hotel's customary high standards of guest comfort and service.

Before leaving each guest room, cleaning staff routinely turn off the radio, television and lights, set back the thermostat and close the drapes. Attention to these little matters results in significant savings in money and energy.

Building Superintendent Nicholls sees to it that turn-out, turn-down, turn-off procedures are followed.

"A simple thing like turning the thermostat down a couple of degrees, say from 23°C to 21°C, which is hardly noticeable, doesn't seem like much," Nicholls said, "but multiply two degrees by 273 rooms, times 24 hours a day. That's 168 hours a week. That's a significant energy saving."

Success depends on staff co-operation

Nicholls said that since the energy audit, staff closely monitor the building's energy use. Success depends to a large extent on the co-operation of maintenance and rooms staff, he said. For example, key maintenance personnel discuss the hotel's heating, ventilating and air conditioning requirements and make necessary adjustments each day.

Discussions, adjustments made daily

With the variable weather conditions prevalent in Calgary, daily discussions and adjustments are necessary, Nicholls said.

"Calgarians say, 'If you don't like our weather, wait five minutes and it'll change.' There's a lot of truth in that. A chinook can come through and it's not unusual for the temperature to soar to a balmy 16°C and drop back to a frigid -32°C in a matter of hours," Nicholls said.

"When I come to work in the morning, if the weather is cold I turn up the heat. If it warms up during the day, I turn it down. If it's cold by 7 p.m. the heat is turned up again and it will stay up through the night if it's needed. Before I leave for the day I always discuss the requirements for heat and air conditioning with the night staff."

Nicholls said there was no staff resistance to the energy conservation campaign. Neither was there a lot of co-operation at first, "except by those who pay the bills." He explained that, in the hotel industry,

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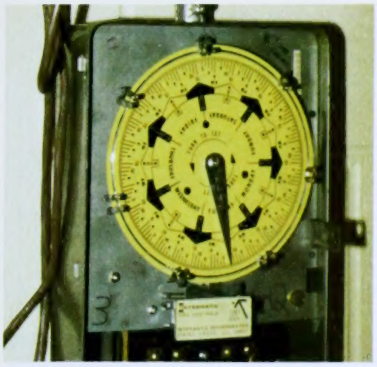
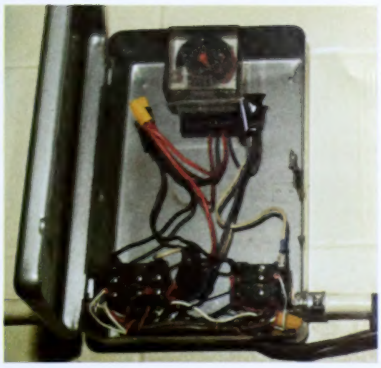


LEFT *This type of automatic timer was installed when hotel was constructed but not used until energy audit disclosed their potential for saving.*

RIGHT *Newer type of timer is more compact and is being installed for use with all feasible equipment.*



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many employees have difficulty understanding the importance of energy conservation. English is often not their first language and because many are temporary and casual workers, they have no personal commitment to conserving energy on the job. However, the Marlborough has been fortunate in selecting staff who have learned quickly the routine of turning off the lights, the television set and the radio, closing drapes, turning down the thermostat, and shutting off everything that's not required, when they leave a room.

"Attention to these little things saves a lot more than you think," he said.

Finding out where energy was being wasted was a major factor in the hotel's energy conservation program, Nicholls said, explaining that some equipment was set at ON all the time because no one was aware of how much energy and money that was wasting. When the Marlborough Inn was built five years ago, several energy efficiencies had been built in by the designers. Most heat and vent units in the hotel have controls to vary air flow as well as day/night timers for turning equipment off when not required. However, because energy conservation was not considered a priority then, these controls were set for 100 per cent fresh air at all times and the timers were disconnected.

The energy audit indicated that nearly $37,000 could be saved simply by reconnecting the timers to turn off exhausts during unoccupied hours. Additional savings are possible if air flow through the exhaust fans is reduced during occupied hours to match the actual ventilation needs. For example, when a restaurant is half full, only half the volume of air needs to be vented, so exhaust fans could be run at reduced speed.

"After the audit made us aware of the savings to be gained by connecting the timers, we shut down all but one of the air conditioning units at 1 a.m. and start them up at 10 a.m. One unit is kept on full-time for air circulation. This measure saves a lot when you consider each unit has a 15 h.p. motor. There are 746 watts in a h.p. That's roughly 11,000 watts. At today's price of electricity, that equals a lot of money."

Another built-in energy saving factor is the hotel's hot water boiler heating system. Rooftop units prewarm cold outside air to 7°C. Fans bring the pre-warmed air down into the building where it is pushed through the coils in the main unit and then circulated throughout the building. This system of pre-warming the intake air is designed to save a lot of energy, Nicholls said.

There are 14 boilers in the heating system. Depending on weather conditions, Nicholls manually turns off all but one boiler at 7:30 a.m. and turns them on again at 5:30 p.m. However, individual thermostats on each of the boilers automatically turns them on when required to keep water temperature at a constant 54°C. It is necessary to keep one boiler on at all times in order to

Installation of heat recovery equipment is being considered by the hotel which could conceivably save an estimated $6000. The procedure appears practical because the hot air exhaust from the washers and dryers is close to the intake air vent for make-up air.

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Individual thermostats on each of the hotel's boilers turn them on only when required to keep the water temperature at a constant 54°C.

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boost water temperature for use in the kitchen and laundry to 82°C.

The original building plans called for insulation on all piping, "an excellent piece of foresight," said Nicholls, because no heat is lost through dissipation which can be a major factor in heat loss.

Fast payback a must

Another important factor in the Marlborough's energy conservation program is that the pay back period for any expenditure must be short. For example, the energy audit recommended replacing the electric dishwasher hot water booster with gas. Hot water throughout the hotel is kept at 54°C except in the kitchen and laundry where the water temperature must be boosted to 82°C in accordance with health regulations. It costs much more to use an electric boost, so converting to gas would pay for itself in a relatively short time. The savings at today's rates is calculated at $2800 for the year.

Another simple measure that costs little and saves a lot is the use of a flow restrictor on each shower head to restrict the flow of water by 4.5 litres per minute. Each restrictor costs about 14c, Nicholls said, but the saving is close to $2000.

"We also lowered the hot water temperature by 10 degrees and that made a big difference too. By habit, when you take a shower, you first turn on the hot water and then adjust the water temperature by turning on the cold tap. You'd be amazed at how much hot water that wastes."

Nicholls said some of the management staff were hesitant to use flow restrictors at first, fearing the guests wouldn't like it. As an experiment he installed flow restrictors on the showers in rooms where some executives of the hotel management company were staying. "It didn't surprise me to learn they didn't even notice the difference," he said.

Inconvenience a factor

On the other hand, a recommendation to cover the swimming pool to reduce heat loss was rejected. Evaporative heat loss from the pool area is estimated to be $1,100 and ventilation heat loss to control humidity is an additional $1000. A pool cover used at night would save $2100 but the inconvenience and the man-hours required to install, remove and store plus the initial purchase was considered poor economy at the present time.

The audit also advised changing room lights to a lower wattage for further energy savings. That's one bit of advice which looked good on paper but didn't work in practice, he said. After exchanging 100 watt bulbs for 60s to save energy, there were numerous complaints from guests.

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"You don't need major renovations and expensive new equipment to save energy. Attention to little things saves more than you think," says Harry Nicholls, Building Superintendent. "Just turning back thermostats a couple of degrees multiplied by a couple of hundred rooms, and the energy saving is significant."

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"So we put back the brighter lights. The customers know what they like, and we try to give them what they want."

Although switching to lower watt bulbs was inappropriate for the guest rooms, the hotel found that considerable energy and money savings could be realized by changing the lights in the various restaurants.

"We've spent a lot of money converting to light fixtures and bulbs which have more reflective power. Where we were using 100-watt bulbs, we're now using 75-watts," Nicholls said.

The energy audit suggested that the present bulbs be replaced with lower wattage bulbs as they burn out, which would be a minimal cost item with almost no pay back period. However, the hotel management staff opted to do the changeover on a more immediate basis.

"We're continually refurbishing the restaurants to be sure they're always attractive and appealing and so we decided against just changing bulbs as they burn out and are changing the lights, restaurant by restaurant," Nicholls said.

When winter comes, the Marlborough expects to realize further energy savings by making some minor changes to the car plug-in system.

"We considered the energy audit recommendations concerning car plug-ins and although we agree there is a potentially high energy savings in this area, we've decided to make changes different from the audit team's suggestions," Nicholls said.

According to the audit, about $1800 could be saved if thermostats were added to energize the plugs, only when temperatures dropped below -12°C. But Nicholls says that other factors need to be considered which perhaps were not known to the audit team and which make their recommendations somewhat impractical.

There's very little, if any, discernable difference when showering, but the use of a 14¢ flow restrictor on each shower head can save the hotel as much as $2000 this year.

The older of the two towers has a plug-in arrangement which can be easily tied in to an automatic timer system at little expense, said Nicholls. It has been decided to control this bank of plug-ins by a time clock which will switch the plugs off during specific hours of the day and on during the night and early morning hours. The system will be closely monitored throughout the season and adjusted as dictated by prevailing weather conditions and guests' reactions.

The newer tower however has a totally different and very sophisticated system which Nicholls says would be exorbitantly costly to change. The plug-in section for this tower will also be closely monitored and cost/benefit tests will be made to see if installing thermostats or automatic timers is feasible, but Nicholls says it is doubtful that the benefits will warrant the cost of making the changeover at this time.

"There are still a lot of things we can do," says Nicholls. "We're thinking of installing heat recovery equipment which we're told can save us nearly $6000. It's logical when you look at it," he said. "The hot air exhaust from the washers and dryers is located on the roof

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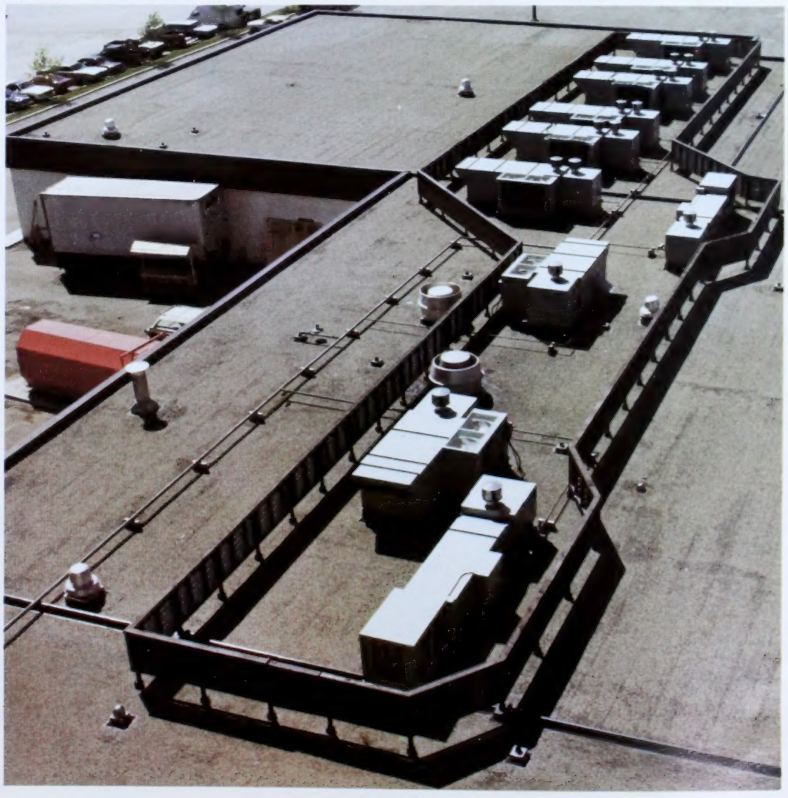

Heating, exhausts and air conditioning equipment is housed on the roof of the seven-storey tower. Intake air is pre-warmed by heaters in chimney-like apparatus on each heating unit then drawn into the main plant by fans. This type of boiler hot water heating system is specifically designed to cut down on energy consumption.

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Energy Management Facts

Question:

Would you explain the various costs contained in a natural gas rate.

Answer:

Natural gas rates are similar in Alberta's major cities, however, variances may occur in some areas. For illustration purposes, Canadian Western Natural Gas Company Limited in Calgary has provided the following rate details for a 2000 Gigajoule (GJ) small commercial customer served in Calgary on their general rate.

Component	Rate $/GJ	Annual Cost	Per cent	Brief Explanation
Fixed Charge/Month	$9.50	$ 114	2%	Offsets fixed costs such as meter reading, accounting, rent, etc.
Base Energy Charge	.713	1426	25%	Operating Costs such as labor, material, taxes, return on investment, etc.
Gas Supply Cost	1.666	3332	58%	Cost of gas purchased by the Company. (net of rebate)
Excise Tax	.14	280	5%	Imposed by Federal Government to keep gas rates in line with oil prices.
Ownership Tax	.14	280	5%	To help offset Federal Government's oil company acquisitions.
Subtotal	$2.659	5432	95%	
Municipal Taxes	11.11%	603	10%	Paid to communities in lieu of property tax (5.26% in most other communities)
Alberta Income Tax Rebate	5.50%	(299)	(5%)	Government refund of income taxes paid by Company, adjusted periodically.
TOTAL COST	$2.868	$5736	100%	

Energy conservation stickers remind staff to turn off lights and equipment not needed when they leave a room.

Hotel saves energy

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right beside the cold air intake for the heating system. The amount of heat being exhausted provides good potential for installation of a heat exchanger to transfer heat from the hot exhaust to the incoming cold make-up air.

"What we're practising here is economy. It's also energy conservation, but the bottom line is economy. We became committed to energy conservation when we saw how much money we can save by saving energy."

Your comments, questions, and suggestions for future case studies and topics of interest, are welcome. Please write to: Energy Alert, P.O. Box 12058 Edmonton, Alberta T5J 3L2